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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---------------------|------------------|
| 09/846,833 | 05/01/2001 | Ryuji Sato | 14594 | 4973 |
| 23389 | 7590 | 09/08/2004 | EXAMINER | |
| SCULLY SCOTT MURPHY & PRESSER, PC 400 GARDEN CITY PLAZA GARDEN CITY, NY 11530 | | | DINH, MINH | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2132 | |

DATE MAILED: 09/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/846,833

Applicant(s)

SATO, RYUJI

Examiner

Minh Dinh

Art Unit

2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on 01 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) ✓
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/1/2001. ✓
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

1. Claims 1-27 have been examined.

Specification

2. The disclosure is objected to because of the following informalities: the usage of "each other" in the specification is grammatically incorrect.

Appropriate correction is required.

Claim Objections

3. Claims 1-27 are objected to because of the following informalities:
 - a. Regarding claims 1-27, mistakes in punctuation and spelling appear in numerous claims. Applicant is required to go over the claims and correct these mistakes.
 - b. Regarding claims 9 and 27, the steps recited in the body of the claim are the steps to execute the first and second programs, not to create the first and second programs as stated in the preamble.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 1-27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The invention is directed to a method for encrypting two or more programs such that the decryption and execution of each encrypted code module of the first program interleaves with the decryption and execution of an encrypted code module of the second program. Without an encryption process properly chosen, there could be unacceptable time delay required to decrypt both programs and thus performance would be severely affected. However, the specification fails to convey enough information about the encryption process such as encryption algorithm and encryption key. Thus, the disclosure fails to enable one skilled in the art to make and use the claimed invention.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 1-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Regarding claims 1, 10, 19 and 21, the claims are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal

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translation into English from a foreign document and are replete with grammatical and idiomatic errors.

8. Claims 2-9, 11-18, 20 and 22-27 are rejected on the same basis as claims 1, 10, 19 and 21 recited in paragraph 5a by virtue of their dependencies

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3, 5, 8-9, 10-12, 14, 17-18, 21-23 and 26-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Aucsmith et al. (5,892,899).

- a. Regarding claim 1, which is representative of claims 10 and 21, Aucsmith discloses a method comprising:

generating corresponding encoded code modules by encrypting processing code modules (col. 3, lines 47-59; col. 5, lines 16-21), and

creating a first program comprising half of the encoded code modules and a second program comprising the other half of the encoded code modules, the first and second program units configured to decrypt the encoded code modules of each other during execution (col. 5, lines 21-52).

- b. Regarding claims 2, 11 and 22, Aucsmith further discloses that each of said first and second programs is created to have the encoded code modules and a decryption processing code module decrypting the encrypted code modules (fig. 5).
- c. Regarding claims 3 and 12, Aucsmith further discloses that said first program includes encrypted code modules to be executed in an odd-numbered sequence during whole processing operation, and said second program includes encrypted code modules to be executed in an even-numbered sequence during the whole processing operation (col. 6, lines 8-16, 54-56).
- d. Regarding claims 5, 14 and 23, Aucsmith further discloses that the decryption processing code module is created so as to be included in the processing code modules (fig. 5).
- e. Regarding claims 8, 17 and 26, Aucsmith further discloses that the encrypted code modules are configured so as not to be returned to the original processing code modules unless being decrypted by both of said first and second programs (fig. 5; col. 6, lines 9-16).
- f. Regarding claims 9, 18 and 27, Aucsmith further discloses the steps for executing the first and second programs comprising:
 - decrypting a first encrypted code module by said first and second programs when said first and second programs are started (col. 8, lines 39-58; col. 6, lines 8-16);
 - executing a resulting first decrypted processing code module by said first program (col. 8, lines 39-58; col. 6, lines 8-16);

decrypting a second encrypted code module by said first and second programs (col. 8, lines 39-58; col. 6, lines 8-16); and

executing a resulting second decrypted processing code module by said second program (col. 8, lines 39-58; col. 6, lines 8-16).

11. Claims 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Schneier ("Applied Cryptography").

a. Regarding claim 19, Schneier discloses a method comprising:

generating ciphertext from plaintext (p. 295, fig. 12.10),

creating three programs configured to decrypt the ciphertext wherein two neighboring programs are configured to work with each other in the decryption process (p. 295, fig. 12.10).

Schneier does not disclose applying the method to code modules. However, Examiner takes Official Notice that code modules to be encrypted and decrypted later for execution is well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the Aucsmith method to code modules since Examiner takes Official Notice that code modules to be encrypted and decrypted later for execution is well known, and well known for the purpose of protecting software during distribution and storage.

b. Regarding claim 20, Schneier further discloses that the two programs comprises a pair of the first and second programs, a pair of the second and third programs and a

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pair of the first and third programs (p. 295, fig. 12.10; p. 358-359, see Triple Encryption with Two Keys and Triple Encryption with Three Keys).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aucsmith as applied to claims 1 and 10 above, and further in view of Sekiguchi et al. (6,772,419). Aucsmith discloses that the first and second programs each have a decryption processing code module decrypting the encrypted code modules (fig. 5 element 207). However, Aucsmith does not disclose using a common area shared between the first and second programs. Sekiguchi discloses using a common area shared between a first and second programs (fig. 2; col. 5, lines 10-14). It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the Aucsmith method to utilize a common area shared between the first and second programs as taught by Sekiguchi, to store shared data accessible to both programs.

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14. Claims 6-7, 15-16 and 24-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aucsmith as applied to claims 2, 11 and 22 above, and further in view of Nardone et al. (6,205,550). Aucsmith does not disclose waiting for a pre-calculated period of time, executing a next processing after the pre-calculated period of time has elapsed and terminating the first and second programs when a lag occurs in the decryption of the encrypted code modules upon dynamic analysis by a software debugger. Nardone discloses a method for preventing the execution of a code module from being observed by a debugger by waiting for a pre-calculated period of time, checking whether the elapsed execution time has exceeded a predetermined threshold and terminating the execution if the result is true (col. 4, line 65 – col. 5, line 15). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the Nardone method into the Aucsmith method in order to prevent the execution of a program module from being observed by a debugger.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nakamura (4,905,277) discloses a method for enciphering deciphering instructions in a microcomputer.

Jakobsson (6,049,613) discloses a method for encrypting, decrypting and providing privacy for data values.

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Mambo et al. ("A Tentative Approach to Constructing Tamper-Resistant Software")

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minh Dinh whose telephone number is 703-306-5617. The examiner can normally be reached on Mon - Fri: 9:00 am - 5:30 pm.

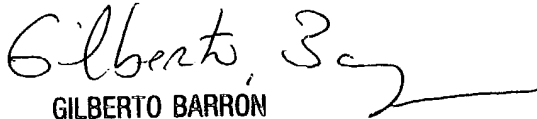
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on 703-305-1830. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MD

Minh Dinh
Examiner
Art Unit 2132

MD
9/1/04


GILBERTO BARRON
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100